



Technical Training Tip of the Month

Ford Transmission Control Switches Overdrive Cancel and Tow/Haul Mode

By Grant Wolter

Why is there a transmission control switch or button?

Transmission control switches, in their current guise, began to appear on vehicles with the advent of electronic automatic transmission controls. The control switches usually come in the form of a button located on or near the automatic transmission shift lever. The button is often labeled “OD off” or “OD cancel”, though a new version on some Ford trucks has come out recently called “Tow/Haul”. Early versions of these control switches were most commonly used to simply disable overdrive instead of having a separate OD and D range on the shifter.

Canceling overdrive means that, in a 4-speed auto trans for example, the transmission would shift up and down through 1st, 2nd, 3rd and never get into 4th. Being able to disable the overdrive gear in an automatic transmission is desirable because drivers sometimes experience engine lugging, rapid up-down-up shifting (shift hunting), and general sluggishness under driving conditions that alternate between light and medium engine loads. You’d disable overdrive for some of the same reasons that you would downshift a transmission “D” to “2”.

Driving around town, stop and go, going through some rolling hills, or climbing a medium grade, are all driving conditions that the transmission might be continuously upshifting and downshifting between the top two gears. Transit and delivery vehicles often drive under these conditions all day long. As an aside, there is also going to be a lot of torque converter locking and unlocking going as well. You might intuitively think that, “this can’t be good for the powertrain”, and you’d be correct. Every shift and every torque converter lock-up cycle contributes to wear in the transmission. Reducing the number of unnecessary shifts and torque converter lock-up cycles will lengthen the life of the transmission. If you were driving a manual transmission, you wouldn’t even consider shifting that much and you probably would not ever engage the highest gear in those conditions. This is the time that you’d want to “cancel overdrive”.

Ford’s new “Tow/Haul” switch adds another dimension to the idea of “overdrive cancel”. If you hadn’t noticed, you have virtually no engine braking at any speed or gear when you’re in the OD range. Added to the idea of preventing “shift hunting”, you might also want to shift down for good ole fashion “engine braking”. Wouldn’t it be nice to also have some engine braking whenever you backed off of the throttle, and reduce the number of times that you went from throttle-to-brake-to-throttle as you drove around town to the umpteen stops of your route during the day? Besides reducing leg fatigue, that would reduce the number of brake applications and increase the life of your brakes.

On the other hand, would you like to still get into overdrive for some decent freeway fuel mileage without having to remember to hit that button again to get your overdrive gear back?

Here's a run down on Ford's "Tow/Haul" mode when engaged:

- Raises the shift point RPMs and internal trans shift pressures for a given engine load
 - Maintains the ability to engage overdrive gear, but eliminates the possibility of engine lugging
 - Controls shifting frequency to avoid shift hunting and unnecessary torque converter cycling
- Engages the "coast clutch" and uses other internal trans clutch/band application strategies in order to achieve engine braking through all gears as the transmission coasts down.

Why aren't OD Off / OD cancel / Tow/Haul already engaged when I start up?

Keep in mind that the intention of having overdrive gears is to improve fuel mileage. To get that improved fuel mileage you need to get into that overdrive gear as soon as possible, and stay there as long as possible. As a general rule, automatic transmission electronic strategy is to get you into the highest gear possible, and lock up the torque converter as soon as possible for a given engine load. EPA test methods for fuel mileage testing and ranking of OEM vehicles does not currently allow for the pushing of a button during the test to "allow" overdrive. The test must be done by dropping the shifter into drive and off they go. If the vehicle started with OD off / OD cancel / Tow/Haul engaged, EPA fuel mileage ratings would suffer.

You can take advantage of the benefits of the transmission control strategies associated with the transmission control switch by remembering to hit the button or switch every time you start your vehicle...or...you can contact InterMotive about our DuraTrans and BrakeMax systems that perform that function, and more, for you.